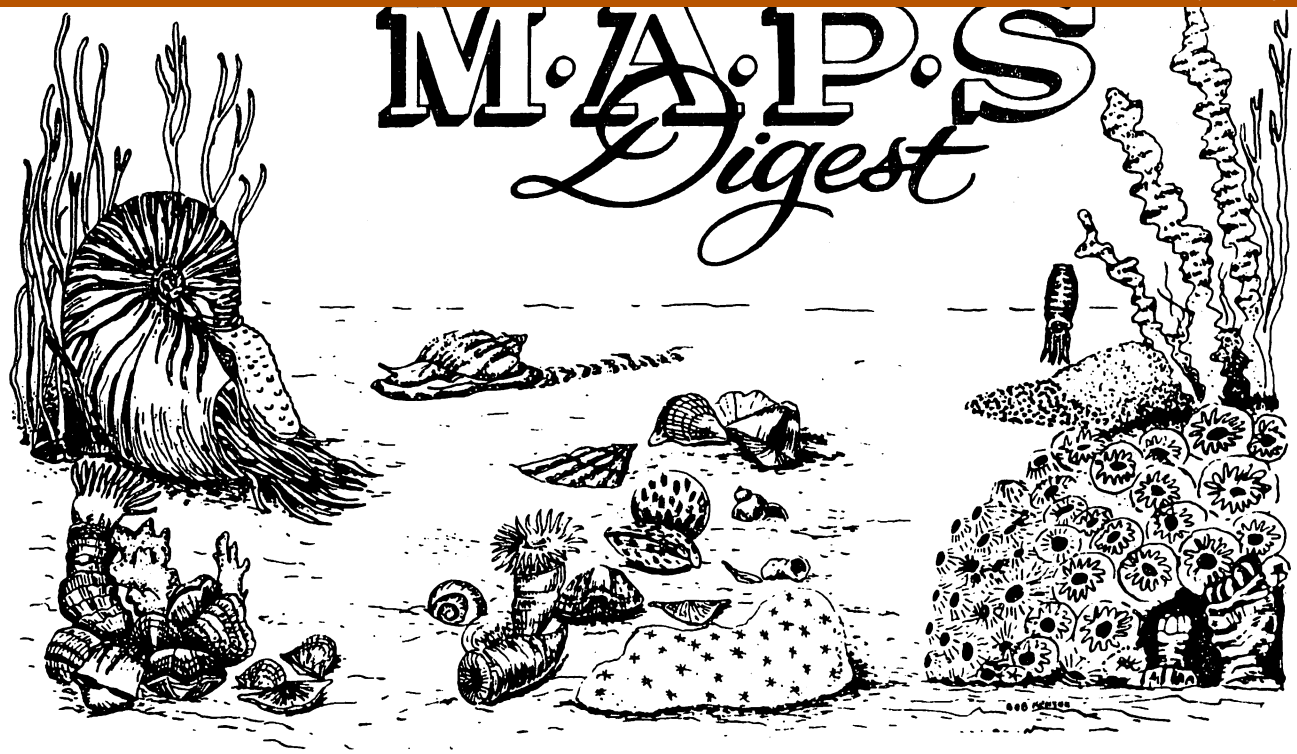
VOLUME 7

M·A·P·S Digest



NUMBER 7

Official Publication of
Mid-America Paleontology Society

October, 1984

FOSSILMANIA - 84

Austin Paleontological Society --
MAPS Affiliate

It's THE Fall Show/Swap/Auction!! WHEN is it? October 26, 27, 28. WHERE is it? Oakdale Park, Glen Rose, Texas. WHO do you contact? F. O. (Frank) Crane, 1603 Twilight Ridge, Austin, TX 78746, Phone 512-327-4005.

Members of APS have been working hard for a year--auctions, garage sales, bake sales, you name it--to make certain FOSILMANIA number II is a huge success. Now the uneasiness before the spectacular. Everyone knows about those pre-show jitters. All is ready. Synchronize your cars to head to Oyster Paradise. Oh, but there's lots more. Have you ever seen those Glass Mountain fossils, or those echinoids? How about those Cretaceous ammonites, Texas style?

Display tables $6 for the weekend; field trip information galore; a real Texas BBq Saturday night; collecting site information enroute. Don't forget a specimen for the auction. What a fall junket it will be!!

It's only a month away! Pack up your displays, Tables are free. Meet old friends, make new friends at FOSSILMANIA - 84. It's October 26, 27, 28 and new treasures from ancient seas. See you there?

(⚱ ⚱)

MARK YOUR CALENDARS

6 Oct MAPS Meeting -- Field Trip -- A quarry near Lee Center, Illinois Lew Kehr, Ottawa, Illinois, in charge. See page 2.

26 Oct FOSSILMANIA - 84 -- Austin Paleon-
27 tological Society -- Glen Rose,
28 Texas. See Column 1, this page.

3 Nov MAPS Meeting -- Augustana College
Fryxell Museum, Rock Island, Il
1:00 p.m. Board Meeting
2:00 p.m. MAPS Meeting

1985 EXPO VII -- You can begin dreaming!
April 19, 20, 21.

(⚱ ⚱)

Did you know there is a little town in Oregon name of Fossil?

FIELD TRIP -- Saturday, October 6th

Site -- A quarry near Lee Center, IL
Formation -- M. Ordovocian - Black River Formation
Fauna -- Trilobites, gastropods, brachiopods, pelecypods, and numerous cephalopods.
Meeting Place/time -- Meet at 8:30 at the Sunset Inn (Junction of 30 and 52 -- 3 miles north of Amboy)
Motels -- Conifers Motel, Amboy (Jct. 30 & 52) or Blackhawk Motel Mendota, IL
Misc. Info -- October 6 - 7 Starved Rock Earth Science Club Show at High School in Mendota

As 2nd Vice President, it is my responsibility to see that the field trips are schedules and planned for. I feel that the field trips we've had this summer have been most successful. This has been accomplished in a large part by the fact that 3 other MAPS members each took the responsibility of preparing one of the trips. Thanks to each of you for your help--Larry Johnson, Canton, Illinois; Bob Wolf, Fort Dodge, IA; and Lew Kehr, Ottawa, IL.

All of us in MAPS appreciate your assistance.

Don Good
Aledo, IL

(⚲ ⚲ ⚲)

INDIANA SOCIETY
OF
PALEONTOLOGY

Indiana Society of Paleontology is now officially a Chapter of MAPS. With the adoption of their Constituation and By-Laws on September 8, 1984, they become the first to adopt the Chapter status under which each individual member is also a member of MAPS. Their membership list shows ten members, individual or family.

The organizing leader and first President is Margaret Kahrs who met a year ago in June at the 500 Earth Sciences Rock Show and Swap in Greenfield, Indiana with persons interested in forming a local fossil club to be affiliated with MAPS. Other officers include: Vice President, Robert Howell, Secretary/Treasurer, Marcia Sisson; Laison Officer, Franklin Hadley.

The Indiana State Museum in Indianapolis offered an informal alliance with a meeting place when desired.

The Society has adopted a logo incorporating typical Indiana fossils: Cyathocrinites multibrachiatus, lower Mississippian age from Crawfordsville, Indiana; Dalmanites verrucosus, mid Silurian from Waldron; Paraspirifer acuminatus, mid Devonian from the North Vernon Ls; and Platyceras, sp. representing genera found in Indiana from rocks of Silurian to Mississippian ages.

Indiana has a rich fossil fauna to be investigated and enjoyed by paleontological collectors.

Franklin Hadley
Laison Officer

(⚲ ⚲)

From Marcia Sisson, Sec./Treas. A Sunday, November 11, 1984, meeting 2:00 p.m. at Indiana State Museum, 202 N. Alabama, Indianapolis. Logo was adopted after a contest among members. Mrs. Richard Jones, Crawfordsville, donated a crinoid in matrix as a prize. The design of Franklin Hadley was accepted. Franklin donated the crinoid specimen to Indiana State Museum.(The crinoid in the logo is from Dr. Gary Lane's report on the Crawfordsville site.) (Ed. comment--would someone send information where to get a copy of that report?)

(⚲ ⚲)

Congratulations To INDIANA SOCIETY of PALEONTOLOGY from all of us in MAPS. Good job, Maggie--keep it up! Love that Logo!! It's classy! Good job, Franklin.

MAPS ACCOMPLISHES THE IMPOSSIBLE--Don Good

Since MAPS founding the only thing predictable it has turned out is the fact any undertaking would succeed--to the point of excess sometimes. MAPS members, all working for the good of the society with no counting of cost have accomplished much. Consequently we have experienced tremendous growth; very successful EXPOS; expansion into the formation of Chapters. There aren't sufficient superlatives to say it all when we think what THE DIGEST has become.

There is something troubling me. But the undertaking of the project I have in mind will require the greatest effort yet by MAPS members. Maybe our collective minds will be able to figure out a solution.

To start at the cause of my problem; I have learned of classic fossil books being hauled to the dump after the owner's death. The survivors could not locate anyone who was interested in them. Secondly, a very dear MAPS friend of mine from Peoria lamenting her concern about what to do with her collection, so they would have usefullness after she passed on.

Should MAPS consider undertaking a national museum and library? Books could be checked out and fossil specimens loaned to those doing research. Copies of required pages could be made from source books and mailed to those requesting such. We who made requests would expect to pay shipping and duplicating costs. However the costs of storage and wages for personnell would be enormous. It might be affordable if we could reach an agreement with a college somewhere--maybe a government grant could be obtained. I believe that many of our members, even those who live a great distance away might come to the facility to donate several days to make it work. The American Federation of Mineralogical Societies now generates tens of thousands of dollars of interest for their scholarship fund. Might we be able to finance the museum/library the same way.

What a wonderful dream (or is it just a pipe dream?) If you have any thoughts about the ideas discussed, please write me and share them.Don Good, 410 NW 3rd St., Aledo 61231.

(Ed. comment--several years ago when Paul Caponera and after that Cheryl DeRosear were Presidents of MAPS this project began to be discussed. The late Harrell Strimple intended to donate some books to MAPS but we had no spot for a library. Our fledgling organization is maturing now so maybe this dream can one day be realized. This resource center might be anywhere there is a drive. See READER'S DIGEST, September, 1984, "The Littlest Librarian")

( ) ( )

BRUCE & CHARLOTTE GIBSON, 10047 Lakeside Dr. Cincinnati, OH 45231

We are submitting the following article for publication in the next edition of the MAPS DIGEST. This is an issue that we feel is of concern to all collectors and we hope the article will lead to some positive action.

LEGALLY BINDING WAIVER TO RELIEVE QUARRY OWNERS OF INJURY LIABILITY

Most fossil collectors have probably had experiences similar to ours. While travelling in Florida on vacation my family and I wanted to collect fossils along the way. Almost every time we tried to gain access to a quarry the grounds were either posted with warnings of prosecution upon trespass or the quarry owners denied access because of restrictive clauses in their insurance policies. The owners I talked to claimed that if they did permit access, their insurance rates would increase significantly. One owner was very sympathetic to our cause and went so far as to give us specimens that he himself had picked up while working; however even he would not let us hunt on quarry property. We indicated that we would be willing to sign waivers for liability in case of injury; however we were told that quarry operators had found that waivers do not stand up in court. In effect this leaves the quarry operator defenseless and, understandably, most are not willing to take the risk.

It seems that this is an area in which MAPS might use its influence to negotiate with insurance companies, quarry owners, and lawyers to develop a waiver of liability that would be legally binding. If this could be achieved it would open many prime collecting sites that are presently closed to collectors--for example, the world renowned Devonian site at Sylvania, Ohio. Is there anyone out there with suggestions, influence, or enough legal savvy to help?
(Another challenge!!)

DON BISSETT, 3925 Dust Commander Drive,
Hamilton, OH 45011

I read Don Good's suggestion regarding articles on cleaning, repairing, preserving (also include identifying, labelling, displaying), etc. fossils in the Summer, 1984, MAPS DIGEST. I think it's a great idea. But rather than having to wait for everyone to submit their articles, perhaps it could become a monthly series like "From The Matrix" is now. If all the aspects of preparing fossils for display are included in the series, perhaps an appropriate title is "Curator's Corner." A compilation of all the articles could be put together and issued as a single document later.

Enclosed is an article on cleaning fossils I wish to submit. The methods described are ones I use constantly to prepare my material. I hope they prove useful to others.

AND SO BEGINS --

THE CURATOR'S CORNER

Cleaning Fossils - Specimens In Shale

Have you wondered how those big Isotelus trilobites are cleaned? Or how the fine detail of Crawfordsville crinoids on slabs is revealed? How about specimens which are completely freed of shale, such as enrolled trilobites? Certainly, they don't come out of the ground looking the way you see them at EXPO. An air abrasive cleaner (a miniature sand blaster) is a key tool for preparation of these fossils. But that is only a small part of the whole process in preparing these fossils. Here is a description of that process.

Let's start at the beginning with the specimens on slabs of matrix. The beginning for us is the time when the fossil is collected. First of all, the types of specimens being discussed are rarely, if ever, found by surface collecting. Weathering will destroy them and their matrix. (Shale is merely compressed mud. Water will convert it back to mud, often quickly. A specimen on shale matrix should never be soaked in water.) The good specimens are collected by digging. In general, the deeper fossils are buried, the better is the preservation. If the fossil comes out of the ground intact, there is no problem. For softer shale, this is a good time to begin cleaning excess matrix from the fossil. The shale is probably damp and soft and can be worked with a sharp knife. If the fossil breaks when dug up, as is often the case for thin-skinned Isotelus and fragile crinoid arms, repair is necessary.

For minor breaks, on-the-spot repair is best. It's the easiest way to make sure all the pieces have been recovered. It is vital that the site of gluing be free of debris. A speck of dirt will interfere with proper fit of the parts. A dry tooth brush (recycle those old used ones) and/or sharp point will clear the gluing surfaces. Water-diluted Elmer's glue works quite well for the repair.

For major repairs, all the pieces are gathered and transported home for careful reassembly. When gathered, the pieces can be laid out on a cloth in a box in the appropriate positions for later gluing. Again, the gluing surfaces are carefully freed of debris prior to gluing. Experience with jigsaw puzzles can be invaluable.

Even specimens that are intact may be badly cracked and subject to flaking. A thin coating of very dilute Elmer's glue will soak into the cracks and stabilize the fossil. The same is true for stabilizing matrix. This stabilizing can be done before the fossil is taken out of the ground if necessary. A shallow trench chiseled around the fossil then permits removal of specimen and supporting matrix. The thin coat of dried glue will not interfere with later cleaning efforts.

There are advantages for a water-soluble glue like Elmer's for fossil repairs. It dries relatively slowly. This permits time to fit the pieces precisely before bonding occurs. A contact cement does not permit sufficient time to fit the pieces before it hardens. Elmer's also dires clear. And if need be, water will remove it. Elmer's is surprisingly strong for gluing even fairly large chunks of matrix together. Again, the gluing surfaces must be free of debris. The chunks of matrix can be held in place with rubber bands or C-clamps until the glue dries.

Thinner or very soft, crumbly pieces of matrix can be strengthened by a layer of Elmer's glue, artist's Mod Podge, or plaster on the back side. The white color of the plaster can

be hidden if desired with gray water color paint or a coating of crushed shale and Elmer's. Or a gray glue (a mixture of black and white components such as Duro from Loctite Corp.) can be used. Its color is very close to that of shale. Excess matrix can be trimmed off by nibbling with pliers if thin enough or with a carbide hacksaw blade or an abrasive blade of a circular saw.

Now the fossil has been glued back together, and the supporting matrix is solid. It is time to remove the matrix obscuring and burying the fossil. The object is to have all but the back of the fossil exposed. This gives the fossil three dimensional character. The matrix can be worked out with a needle-point scriber. (General Hardware Manufacturing Co. makes a good one.) The site being worked is constantly cleared of loose matrix with a toothbrish. For hard matrix, water delivered with a toothbrush to the site will soften it and make removal with a scriber much easier. Such matrix will quickly dull the point, which should be sharpened on a whetstone aften for maximum efficiency. This matrix-removal process is slow and must be done carefully near the fossil. A slip with the sharp point will leave an ugly gouge. Periodically during this process, cleaning with the air abrasive cleaner provides a means to monitor progress in exposing the fossil.

An air abrasive cleaner is a powerful tool. It is expensive, costing approximately $1000 (MPM Corp.). There is also the cost of air compressor, dust removal/blower system, and glove box for cleaning. The latter two can be home made. This tool delivers powder at up to 100 psi to rapidly clear matrix away from a specimen's surface. Handled carefully (constantly moving the stream of powder roughly parallel to the specimen's surface), it can reveal intricate details without damage. Carelessly controlled, it will turn a trophy into trash. Yet for all its power, it will not replace the much more rapid manual clearing of bulk matrix. It is also all but useless on limestone. (High speed dentist drills are also useful. But they are generally not available as used equipment and are very expensive new.)

After several cycles of manual and air abrasive cleaning, the fossil is completely exposed and cleaned. But the job isn't finished yet. There are countless grooves in the matrix left by the scriber. For an attractive specimen, these are removed by scraping the matrix smooth with a knife or sandpaper if the rock is soft enough. For very hard or rubble-containing matrix, a small hand-held grinder can be used.

Now the fossil juts above the matrix, which provides a smooth background. Dust from the air abrasive cleaner and matrix scraping is removed with a dry brush or vacuum. Scrubbing with water is used only on the most rugged specimens. For contrast, a coat of clear boot polish can be applied to the dry fossil with a dry toothbrush. Done!

Several hours of work have gone into preparation of just one good matrix specimen. Look at the ones displayed at EXPO. It was worth the effort. Don't you agree?

We've discussed the process by which fossils on slabs of shale are prepared. How about specimens which are to be completely freed of shale such as enrolled trilobites, blastoids, or brachiopods? Some of the techniques from above are the same. But there are others that can be used.

In general, these fossils too are better preserved when collected by digging. All the pointers regarding collecting mentioned above hold here. Elmer's glue is good for repairing these fossils. The needle-point scriber and air abrasive cleaner are excellent tools to comepletely clean them. However, the expense of the cleaner is probably prohibitive for many collectors. The same job can be done manually, though much more slowly.

A sweing needle embedded in a large eraser or the eraser end of a pencil makes an excellent hand-held cleaning tool. The sharp needle point can be used to scrape (parallel to the surface of the fossil) shale out of small grooves. Larger areas can be worked with dental picks. (Ask your dentist to save the old ones for you.) A damp toothbrush is used to clear the fossil of debris. The fossil can be completely cleaned in this manner.

Some shales can be removed with a scrub brush and soapy water. Don Good's suggestion of denture cleaner adds another possibility (see Summer, 1984 MAPS DIGEST). Sturdier fossils can be boiled in soapy water. A particularly good surfactant ("soap") for removing shale in boiling water is Quaternary O (CIBA-

Geigy Corp.). An ultrasonic cleaner (available from chemical supply houses) can remove traces of shale from difficult to reach crevices.

Some fossils, such as Cretaceous mollusks from Coon Creek, Tennessee, are far too frail to be soaked in water. The sandy matrix is cleaned from them by gentle strokes with a slightly damp artist brush. Once clean and dry, the specimens are quite hardy.

Any cleaning procedure should be tested on a poorer specimen before proceeding to that top quality one. In this way, procedures can be screened to find the most appropriate for fossils from a particular locality. The methods listed here work for me. These and others are listed in a good source book: FOSSILS FOR AMATEURS by Russel P. MacFall and Jay C. Wollin.Van Mostrand Reinhold Company. Do you have others to add to the list?

A follow-up letter to Don asking for addresses and sources of supply for the many things mentioned got this reply--

Duco from Loctite Corporation -- hardware store.
Mod Podge -- art supply store.
Needle-point scriber -- well-stocked hardware store.
Air Abrasive -- MPM Corp., 71 West Street, Medfield, MA 02052
(At one time Lloyd Gunther sold an air abrasive. Lloyd Gunther lives in Brigham City, Utah.)
Boot polish -- Kiwi paste.
Chemical supply houses have offices in most major cities. Cole Palmer, VWR Scientific, Fisher Scientific, Curtin Matheson.

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Next month THE CURATOR'S CORNER will tell all about Quaternary O by Gerald Kloc, Buffalo, NY

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THE RESEARCH CORNER

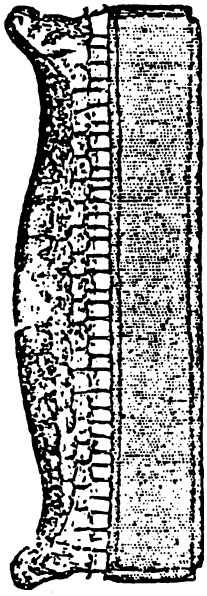
Dr. Richard B. Hoover, Copyright, 1984
7706 Teal Drive
Huntsville, AL 35802

DIATOMS: QUEEN OF MICROFOSSILS --

I know a great many fossil collectors who avoid microfossils, and consider them uninteresting or too small and difficult to collect and display. It is my hope that this series of articles on microfossils will allow some of these people to begin to appreciate and enjoy them, as well as provide additional information that may be of value to those currently interested in this branch of paleontology. I, too, enjoy the megafossils, as I have experienced the tired pleasure that comes from carrying a well sutured Eopachydiscus brazoense weighing over 120 pounds from a cow pasture in Oklahoma (complete with Bull). I have seen the wonderment in my wife's eyes as a perfect, enrolled, 3 inch Phacops rana enrolled from the bank of a New York creek and landed upon her startled foot. And I have witnessed the surprise of a Denver Airport Skycap as he attempted to lift my suitcase containing a 150 pound Cretaceous turtle that I found in the Badlands of Nebraska. (My clothes returned to Huntsville in a cardboard box.) So I must plead guilty to an intense appreciation of these larger representatives of life on prehistoric earth. But in this series of articles I want to describe the wonderful world of MICROFOSSILS.

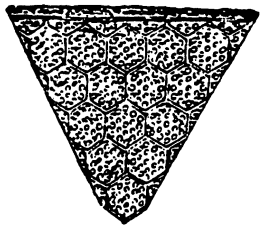
Any fossil that is sufficiently small that it is best studied with a microscope is considered a microfossil. Most are invertebrate, but the tiny teeth and bones of fish, reptiles, and mammals are also microfossils. And not all are minute. Undoubtedly the first microfossil ever seen by man was the large (2 inch diameter) foraminifera Nummulites gizehensis that was discovered by Herodotus in the fifth century B.C. These exquisite forams make up the Eocene Gizeh limestone that was used in the construction of the pyramids of Egypt. However, most microfossils are a great deal smaller than this. But it is the microfossils that hold the clues to the origin of life on our planet. Just last year there came the exciting discovery of microfossils (that bear some resemblances to yeasts) in the 3.9

billion year old Isua meta-quartzites of Greenland. These discoveries may force us to completely revise our thinking about the chemical evolution of life on our planet. Indeed, all microfossils are not even dead. Some 600 million year old bacteria from Russian Salt deposits have been found to be alive and capable of reproducing and growing when released from their long state of saline suspended animation. I will describe more of these exciting discoveries in subsequent articles; but now I wish to turn to my favorite subject: DIATOMS.



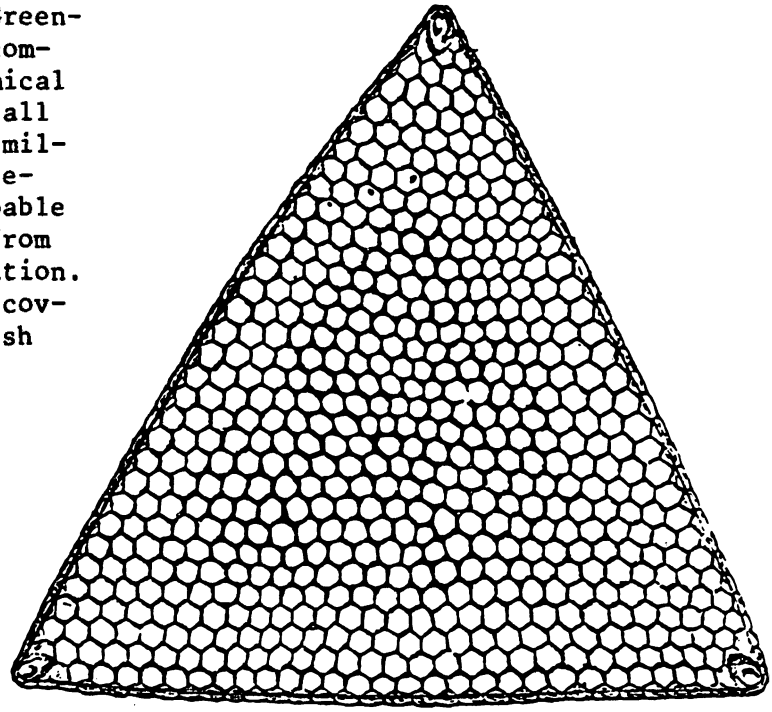
a.

a. Girdle view.



b.

Fig. 204.—*B. (Triceratium) Favus.*
b. Portion of valve with puncta × 1000.



c.

c. Valve view.

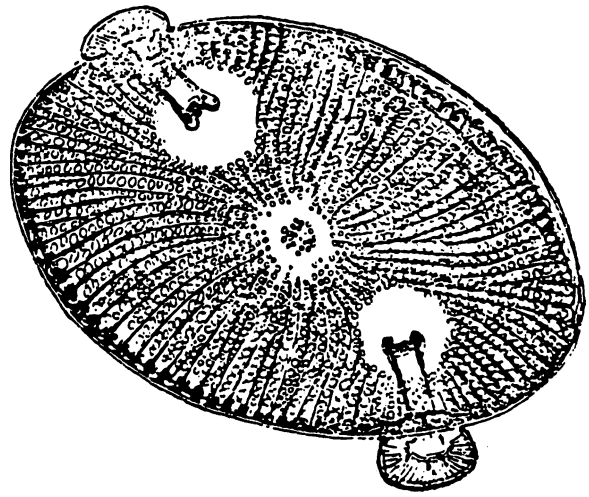


Fig. 212.—*Kittonia elaborata.*

Diatoms are among the most exquisite and beautiful of all of the microfossils. This is due to the fact that they build the most intricate shells of opal to house their cytoplasm. Certainly, there is also great beauty in the exquisite three dimensional Radiolarians, Foraminifera and the stark drama in angular sponge spicules. But it is difficult to match the intricacy, precision and order that is found in the world of diatoms. These tiny plants are unicellular and colonial golden-brown algae belonging to the division Bacillariophyta. Diatoms have the unusual ability to fabricate delicately laced shells of hydrated amorphous silica. The shells, known as frustules, are not highly soluble in water, and require no subsequent replacement for "fossilization". When the diatoms die, their shells sink to the bottom of the ocean, river, or lake in which they were living. Large concentrations of such deposits are known as a "diatomaceous ooze". In some areas the sea floor is covered with up to a 1000 foot thick layer of diatom shells. (See MAPS DIGEST, January, 1980, "All About Ooze"). When you consider that diatoms range in size from about one ten thousandth of an inch to one twentieth inch in diameter (a speck of flour to a small sand grain), you can appreciate the colossal number of dead diatoms required to make up

such a deposit. Over 11 million square miles of the Antarctic and Northern Pacific Sea floor is buried under such a mantle, although it is not always this thick. This is made possible by the fact that diatoms are the most abundant plants on the face of the planet earth, not just in sheer numbers but also in the amount of organic matter that they contain. While living, diatoms play a key role as primary producers at the base of the marine food chain as major sources of oxygen replenishment for our atmosphere. Commercially, we use the fossil forms (diatomite) as filters for beer, wine, swimming pools, fish tanks, and a host of other beneficial applications.

In the fossil record, we see the diatoms appear very abruptly near the Cretaceous/Tertiary interface. (There is one spurious report of Jurassic diatoms, but I have never seen any actual material or conclusive proof of the dating and remain somewhat skeptical of this information.) I personally have in my collection a great deal of topotype Cretaceous material that Dr. G. Dallas Hanna collected from the Moreno Shale Fm. of Panoche Hills, California in the 1915-1927 period. This served as the basis for his 1927 monograph on "Cretaceous Diatoms from California". This is intriguing material, as the diatoms are numerous, beautifully formed, perfectly preserved, and highly evolved. It contains the exquisite Glorioptychus callidue, Hanna and the exceedingly rare Sphynctolethus monstrosus, Hanna. These are uniquely Cretaceous diatoms, but some of the forms in this deposit have undergone only modest changes to the present day. In the Paleocene and Eocene, we find very bizarre diatoms adorned with long stalks tipped with ear shaped structures as the Kittonia elaborata illustrates. The Paleocene and Eocene forms are well represented in the magnificent deposits of Singilievsky and Kamischev, Russia; Cambridge Estate and Newcastle, Barbados. Oligocene deposits of diatoms are very rare. In the Miocene we find beautiful forms, such as the glorious Actinoptychus heliopelta that occurs in a very limited geographical and geological range centered on the famous Calvert formation of Calvert County, Maryland. Wonderful Pliocene diatoms can be found in California. Some of my most magnificent Pleistocene diatoms are from the Antarctic deposits off the Ross Shelf off McMurdo Sound, Antarctica. These include gigantic Triceratium favus that are so big that their triangular shape can be seen with the naked eye.

When the temperature drops to 10 below or soars above 100 you can trudge about digging for crinoids, or tracking the wild ammonite if you wish; but as for me, I will be perfectly happy to open a vial of diatoms from Simbersk, Russia, or Oamaru, New Zealand, to begin my quest for new fossil species. And to participate in this rare paleontological joy, all you need is a microscope (even a cheap Tasco will work but better instruments will allow greater appreciation for the fine details present) and some basic knowledge about how to collect, prepare and mount diatoms for study and enjoyment.

These matters will be discussed in a future article, or if you are impatient you may read some of the other articles I have published elsewhere. (Oops, Sorry, Madelynne! I should not have mentioned that!) And again I discover that it just isn't possible to cover these marvelous little plants in a single article. Next time, I shall describe the importance of Hog's eyelashes and Tiger whiskers to diatom work.

(Richard is an extremely busy man. Although I have never met him his conversations are always fascinating. He has promised more articles and a Bibliography. You will have more pleasure ahead. Thanks Richard Hoover)

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HANDBOOK OF PALEO-PREPARATION TECHNIQUES

Many texts have appeared in the last several decades describing preparation procedures, but completely failing to explain how these procedures are performed.

The Paleontological research is greatly expanding throughout the country. With this expansion, a shortage of trained paleo-preparators has occurred. It is the purpose of this book to provide an aid to those people wanting to learn the basic skills of the trade...

Topics covered are laboratory management, basic field collecting; recordkeeping; mechanical and chemical preparation; exhibit construction; casting techniques; and supplies

$10 per copy postpaid. Make check or money order payable to: Howard H. Converse, Jr. Florida State Museum, University of Florida, Gainesville, FL 32611

UPDATE FOR YOUR MEMBERSHIP DIRECTORY:

David M. DeBell	R.R.#3, Box 394, Clear Lake, IA 50428
Dr. J. Chiment	Boyce Thompson Institute for Plant Research, Cornell University Tower Road, Ithaca, NY 14854
John & Leigh Hovanec	8025 W. 45th Avenue, Wheatridge, CO 80033 phone 303-433-6025
John Schroeder	213-2275606 or 213-666-4334 Preparatory services: crinoids, ammonites and vertebrates. Jurassic brittle star fish and other fossils for trade.
Dr. Thomas M. Wheeler	2919 Eagle Creek Dr., Kingwood, TX 77345

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ADDITIONS TO YOUR MEMBERSHIP DIRECTORY

Robert J. Hoffman kk663 Parkwood Drive Marilla, NY 14102 716-937-3514	Civil Engineer. Will Trade. Major interest new knowledge, increase my collection of specimens, meeting people with common interest. Has some Devonian specimens for trade.
Mrs. Luella E. Bond 1044 State Hwy 261 Boonville, IN 47601 812-925-6616	Office Manager. Will trade. Wants to learn.
Frederick J. Collier Dept. of Paleobiology Room E-206 National Museum of Natural History Washington, DC 20560 202-357-2405	Collections Manager, Department of Paleobiology, National Museum of Natural History. Will Not trade. Major interest invertebrate fossils, particularly arthropods. Interested in furthering knowledge of Paleontology.
Ivan Doss 17 Union Street Leadington, MO 63601	Major area of interest crinoids, blastoids, trilobites. Has invertebrates for trade.
Cecilia E. Duluk 6700 Amboy Dearborn Heights, MI 48127 313-	Inventory Control. Will trade. Major area of interest echinoderms. Has some echinoderms and a few trilobites for trade. Wants to share ideas and news on paleo with other members.
Victor Hurm, Jr. 1224 W. 31st St. Jasper, IN 47546 812-482-3940	High School Teacher. Will trade. Major interest fossils. Makes cabochons. Has Indiana fossils for trade.
Jon & Diane Morgan 9505 Fleetwood Drive Reno, Nevada 89506 702-972-6549	Branch Manager - Medical Office. Will trade. Major area of interest trilobites. Has trilobites, camel teeth, horse teeth for trade. Wants more knowledge and wants to expand collection.

* * * * * * * * * * * * * * *

Received from John Hearty, SCOTLLAND, just one week after the summer DIGEST had been mailed, was a Scoop. John and a friend found a second conodont. Sometime another letter was received; unbeknown to him, John had actually found a third specimen. John and friend returned to the collecting site and found it ripped up. Next month you will read this story. Of all the collecting incidents, this kind of story is without doubt the most disgusting/the saddest/the most frustating.

Eugene W. Rush 6516 N. Mans Rd. Middletown, OH 45042 -855-3505	Retired. Will trade. Major area of interest trilobites and crinoids. Has trilobites for trade.
Ralph E. Stecker 1304 Maplepark Dr. Champaign, IL 61821 217-352-9645	Retired. Will trade. Interested in fossils of all kinds. Has brachs, ferns, coral for trade. Wants fellowship of membersand to add to his collection.
Jerry Torluemke 1253 W. Thorndale -- Apt. 2 Chicago, IL 60660	
David C. Wilborn 41321 Larwood Drive Scio, OR 97374 503-394-2939	Shipping & Receiving . Will not trade. Interested in all aspects of Oregon paleontology. Wants to meet and communicate with others.
Ric & Darlene Zarwell P.O. Box 1307 Fairfield, IA 52556-1307 515-472-7024	Conservationist USDA Resource Conservation & Development. Will not trade. Interested in fossil and earth history education; the materials, methods and strategies used to interpret the history of life; the development of innovative programs to encourage and motivate others toward purposeful involvement; would like to correspond with others having similar interests.
Michel DeVergilio 11505 Rolland Blvd. Montreal-North, Quebec H1G 3V1 CANADA 541-325-4617	Graduate student of invertebrate paleontology. Will trade. Major area of interest arthropods, especially trilobites, brachiopods, echinoderms, molluscs, Cnidarians & vertebrates. Has Quebec invertebrate fossils--Ordovician, Silurian & Pleistocene. Wants to correspond with other fossil enthusiasts.

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ONE MORE UPDATE

Ted A. Miller	1322 Eastview Dr., Weatherford, TX 76086

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A D V E R T I S I N G S E C T I O N

Ads $3.50 per inch (6 lines). Send information and checks payable to MAPS to: Mrs. Gerry Norris, 2623 - 34th Avenue Ct., Rock Island, IL 61201 Phone 309-786-6505

Wanted: Mississippian crinoids and starfish. Will buy or trade Montana fossils. Also Bear Gulch fossils.

Wally Anderson
2783 Hartford St.
Salt Lake City, UT 84106

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Many thanks for all the time you take to share your expertise. Thank you, also, for your letters of encouragement and reinforcement. This year will be MAPS best year yet!

Marilynn

The Mid-America Paleontology Society (MAPS) was formed to promote popular interest in the subject of paleontology, to encourage the proper collecting, study, preparation, and display of fossil material; and to assist other individuals, groups and institutions interested in the various aspects of paleontology. It is a non-profit society incorporated under the laws of the State of Iowa.

Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

Membership fee: January 1 through December 31 is $7.00 per household.

MAPS meetings are held on the 1st Saturday of each month (2nd Saturday if inclement weather). September, October, May, June and July meetings are scheduled field trips. The August meeting is in conjunction with the Bedford, Indiana Swap. November through April meetings are scheduled for 2 p.m. in the Science Building, Augustana College, Rock Island, Illinois. One annual Internation Fossil Exposition is held in the Spring.

MAPS official publication, MAPS DIGEST, is published 9 months of the year--October through June.

CYATHOCRINITES

FIRST CLASS MAIL

MID-AMERICA PALEONTOLOGY SOCIETY

Mrs. Madelynne M. Lillybeck
MAPS DIGEST Editor
1039 - 33rd St. Ct.
Moline, IL 61265

Dated Material - Meeting Notice